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Customers response to online food delivery services during COVID-19 outbreak using binary logistic regression

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Abstract

This study aims to empirically measure the distinctive characteristics of customers who did and did not order food through Online Food Delivery services (OFDs) during the COVID-19 outbreak in India. Data are collected from 462 OFDs customers. Binary logistic regression is used to examine the respondents' characteristics, such as age, patronage frequency before the lockdown, affective and instrumental beliefs, product involvement and the perceived threat, to examine the significant differences between the two categories of OFDs customers. The binary logistic regression concludes that respondents exhibiting high-perceived threat, less product involvement, less perceived benefit on OFDs and less frequency of online food orders are less likely to order food through OFDs. This study provides specific guidelines to create crisis management strategies.

KEYWORDS
binary logistic regression, COVID-19, health belief model, online food delivery services, purchase decision

1 | INTRODUCTION

Post the outbreak of COVID-19, restaurants and associated services were severely affected prompting the Indian government to categorize food and other related services under essential services. Hence, hotels, restaurants and food delivery services can now start their operations because at least 20% of the Indian population including students, paying guests and young professionals depend on them (Shrivastava, 2020). According to the industry reports, the COVID-19 pandemic has ushered in a new threat to the business of food delivery, which could potentially affect the Online Food Delivery services (OFDs; Keelery, 2020). Restaurants and related services, mainly OFDs, are willing to supply food. However, the customers are hesitant to place orders during this pandemic even though many OFDs have mandated their delivery partners to use personal protective gear while encouraging the customers to pay digitally to ensure contactless delivery. The two critical issues for the drop in OFDs are the health of the individuals who deliver the food and the sanitary condition of the restaurants. These issues have forced existing customers to reconsider their future purchase decisions. The purpose of this research is to examine the differences between OFDs customers who did and did not

order food through OFDs during the COVID-19 outbreak period in India on the basis of their personal characteristics. The study examines the significant differences between these two groups of respondents on their characteristics, such as age, the number of online food orders before the nationwide lockdown, affective and instrumental beliefs, perceived benefit, product involvement and perceived threat.

This paper is organized as follows. The first part of the study discusses the literature review, specifically in the areas of self-protective behaviour and customer intentions. The next part of the study explains the research method. The third part provides the detailed data analysis. The fourth part discusses the implications of the study. Finally, this study concludes with limitations and directions for future research.

2 | LITERATURE REVIEW

2.1 | Theoretical underpinning

An averting behaviour displayed by customers to condense the possibility of an odd outcome is known as self-protective behaviour. It can also be a defensive action taken to decrease individual or group

vulnerability to risk (Ehrlich & Becker, 1972). Chuo (2014) argues that the Health Belief Model (HBM) can explain the self-protective behaviour in the field of customer food safety. The HBM is one of the most widely used models for understanding health behaviours while also explaining and predicting individual changes in health behaviours. The elements in the HBM focus on individual beliefs about health conditions to predict individual health-related behaviours. The model defines the key factors that influence health behaviours. These include an individual's perceived threat to disease (perceived susceptibility), the belief of consequence (perceived severity), potential positive benefits of action (perceived benefits), perceived barriers to action and exposure to factors that prompt action (cues to action; Abraham & Sheeran, 2014; Becker et al., 1977; Jeong & Ham, 2018). The HBM is a widely used theory in health education to describe health-related behaviour preservation and as a guiding mechanism for behavioural health interventions. It is a behavioural model that tries to explain and predict health behaviours by focusing on individual beliefs, attitudes and behaviours influenced by their beliefs about a condition of disease and the approaches to decrease its prevalence. Hence, this model can be used to understand the purchase decisions of the customers during the pandemic.

2.2 | The HBM constructs and relationships between the constructs

2.2.1 | Self-protective behaviour

Self-protective behaviour can also be explained as a function of threat perceived by the customer (Jacoby & Kaplan, 1972; Taylor, 1974). Whenever people see risk somewhere, they develop self-protective behaviour. In normal conditions, self-protective behaviour is not observed by customers while they make a purchase decision. During disease outbreaks, such as SARs, Avian influenza, H1N1 Influenza, Bovine Spongiform Encephalopathy and COVID-19, this self-protective behaviour becomes significantly pronounced. The fear of getting infection spreads faster than the disease itself (Addo et al., 2020; DeLisle, 2004; McKercher & Chon, 2004; Wen et al., 2020). Thus, any increase in fear can lead to anxiety and a shift in the intention of behaviour (Addo et al., 2020; Chuo, 2014; Ishida et al., 2010; Schroeder et al., 2007; Setbon et al., 2005; Weitkunat et al., 2003). This safety behaviour is usually cautionary behaviour, including the behaviour of collecting more information and taking additional care at the time of buying and preparing food. Such fear perception patterns were observed in various service industries such as travel (Lau et al., 2004) and tourism (Chuo, 2007; Cooper, 2013; Pine & McKercher, 2004) and supply chain (Clark, 2012; Kumar, 2012; Kumar & Chandra, 2010). Customers, in particular, often avoid travel and ignore places or products to minimize the risk of illness during SARs and H1N1 Influenza outbreak and this disturbance of spending has a significant impact on the economy. Previous studies have linked fear appeal to the behaviour of respondents to pandemic diseases (such as Avian influenza and Bovine Spongiform Encephalopathy)

in food or meat consumption environments (Brug et al., 2009; Kuo et al., 2011; Nam et al., 2019; Shen et al., 2020; Wise et al., 2020; Yeung & Morris, 2001). From this discussion, it can be concluded that customer buying behaviour or purchase decision, considered in this study as self-protective behaviour, is the outcome of the HBM (individual action). In this study, the self-protective behaviour (purchase decision) is measured as dichotomous variables (did order and did not order food online during the COVID-19 outbreak).

2.2.2 | Perceived threat

Many academic reviews conclude that perceived threat is a core component and the most useful in understanding the practice of a variety of preventive health behaviours. According to the HBM, perceived threat refers to beliefs about the seriousness of a particular disease and how susceptibility they are to it (Berg & Lin, 2020; Bish & Michie, 2010; Carpenter, 2010; Cho et al., 2020; Janz & Becker, 1984; Manika & Golden, 2011; Weitkunat et al., 2003).

Many studies believe that it is possible to combine susceptibility and severity into one construct, namely perceived threat (Aucote et al., 2010; Jeong & Ham, 2018; Manika & Golden, 2011). Studies have shown that perceived severity is hard to predict until it attains such high limits as to be dysfunctional (Jeong & Ham, 2018; Rosenstock, 1990). Perceived threat is a sequential function of perceived severity and susceptibility (Becker et al., 1977; Strecher & Rosenstock, 1997; Von Ah et al., 2004). Perceived threat is defined as a combination of perceived susceptibility and severity and is a construct that is more relevant to the resulting health-related behaviours than an individual consideration of either of these factors (Jeong & Ham, 2018; Rosenstock, 1990).

In this research, perceived susceptibility refers to an individual's subjective perception of the risk of acquiring a particular disease. Perceived severity refers to an individual's feelings about the seriousness of contracting a particular disease. There is a vast difference in a person's feelings of severity and often a person considers the medical consequences and social consequences when evaluating the severity (Bish & Michie, 2010; Cao et al., 2014; Tang & Wong, 2004). Based on the above discussions, the perceived threat of disease may have been increased by daily reports of particular disease infection figures, media news on a particular disease and documentation about patients infected with or who died of a particular disease (Berg & Lin, 2020; Bish & Michie, 2010; Tang & Wong, 2004; Wong & Tang, 2005). Centre for Disease Control and Prevention recommends various self-protective measures to control COVID-19 spread and one of the main recommendations on 'Running Essential Errands' is 'Use online services when available' (CDC, 2020). The chances of COVID-19 spread are relatively high through online food delivery and this has been confirmed by national media news (The Times of India, 2020a). With this note, it is clear that the perceived threat of COVID-19 infection is high through OFDs, which may influence the respondent's purchase

decision. Similar results were recorded by many researchers and are explained in the next section.

Circumstances such as technological disruption, natural disasters and animal-spread pandemic influence an individual at the physical and psychological levels. Such situations bring much change in human behaviour and trigger a type of defensive and coping mechanism to fight against all odds. This protective mechanism is usually developed based on the level of perceived threat. Weber (2006) explains that fear acts as a motivator to reduce the feeling of risk and take specific action to tackle it. Perceived threat is always followed by a feeling of fear. So, if perceived threat is high, the feeling of fear appeal would also be high and, consequently, would result in withdrawal or escape (Addo et al., 2020; Loewenstein & Lerner, 2003; Rhodes, 2017; Rountree & Land, 1996; Vermeir & Verbeke, 2006; Warr, 1987). Based on these discussions regarding perceived threat, the following hypothesis is proposed.

Hypothesis 1 *The perceived threat of catching COVID 19 through the use of OFDs negatively influences purchase decisions*

2.2.3 | Perceived benefits

Health-related behaviours are also influenced by the perceived benefits and perceived risk of taking action (Carpenter, 2010; Glanz et al., 1992; Janz & Becker, 1984; Tang & Wong, 2004). 'Perceived benefits refer to an individual's assessment of the value or efficacy of engaging in a health-promoting behaviour to decrease the risk of disease' (Janz & Becker, 1984). When a person assumes that a specific activity can minimize the vulnerability to a health problem, then, they may participate in that behaviour irrespective of the objective facts about the activity's efficacy (Glanz et al., 1992; Jeong & Ham, 2018). Due to the nationwide lockdown, many individuals were forced to stay inside their homes and they preferred to buy food items through OFDs. Local governments also encouraged individuals to buy products online in order to reduce the spread of the disease (Chang & Meyerhoefer, 2020; Richards & Rickard, 2020; The Times of India, 2020b) and this discussion clears the positive effects of the perceived benefits of OFDs. OFDs are more convenient, safe and cost-effective for individuals than going to hotels and restaurants. The perceived benefits of online grocery delivery have a positive impact on purchase decision during COVID-19 situation and the researchers recorded it (Aldaco et al., 2020; Hobbs, 2020). OFDs have perceived benefits like contact-free delivery and e-wallet payments, which can reduce the risk of COVID-19 spread (Nguyen & Vu, 2020).

Perceived barriers to taking action include perceived inconvenience, expense, danger and discomfort involved in engaging in the behaviour (Janz & Becker, 1984). In this research, the perceived barrier is not considered if customers perceive OFDs as inconvenient, expensive and, risky. In this case, they will not order food items online. However, in this study, only existing OFD customers are considered. It becomes clear that the customers who do not have perceived barrier towards OFDs find them convenient and inexpensive. Also, the customers' fear appeal is measured through perceived threat. Therefore, with regard to the perceived benefits of OFDs, the following hypothesis is proposed.

Hypothesis 2 *Perceived benefits of OFDs positively influence customer's purchase decision*

## 2.2.4 | Affective and instrumental beliefs

Many studies have used theory of reasoned action/ planned behaviour to explain and predict behaviours. These social psychology models indicate that individual behaviour is defined by intentions that are in turn determined by perceptions, subjective norms and perceived behavioural control (Ajzen, 1985; French et al., 2005; Hardeman et al., 2002; Povey et al., 2000). Underlying these three variables are assumptions that can form the foundation of behaviour change interventions. The above-mentioned social psychological models have been used with varying degrees of success to develop approaches to improve health behaviours (French et al., 2005; Hardeman et al., 2002; Li et al., 2019; Nam et al., 2019; Povey et al., 2000). In the cognitive tradition, these models are strongly grounded and concentrate on instrumental beliefs as the detriment of affective and other factors. The attitude component of a behavioural intention comprises both instrumental and affective beliefs (Ajzen, 2012; Keer et al., 2013; Lawton et al., 2007; Lowe et al., 2002). Despite this, a growing body of correlational research shows affective and instrumental beliefs to be strong determinants of intentions and behaviour. Instrumental beliefs relate to the benefits and costs associated with behaviour (e.g., healthy or unhealthy). Affective beliefs are emotion-laden judgements about the consequences of the behaviour (e.g., pleasant or unpleasant, enjoyable or unenjoyable). Thus, attitudes will be most favourable towards behaviours with outcomes that are believed to be both beneficial and pleasant (Lowe et al., 2002). Many studies conclude that affective beliefs are strong predictors of intentions and action than cognitive beliefs (Conner et al., 2011; Lawton et al., 2007, 2009). However, fewer studies have examined the relative importance of instrumental and affective beliefs in predicting observed health behaviour. From the above discussions, it is clear that instrumental and affective beliefs influence the purchase decision and hypothesis below is concluded from the discussions above.

Hypothesis 3 *Instrumental and affective beliefs towards OFDs positively influence the customer's purchase decision.*

2.2.5 | Cues to action & product involvement

Champion and Skinner (2008) define cues of any action as 'anything that triggers or reminds individuals to take action'. Studies

FIGURE 1 Conceptual model
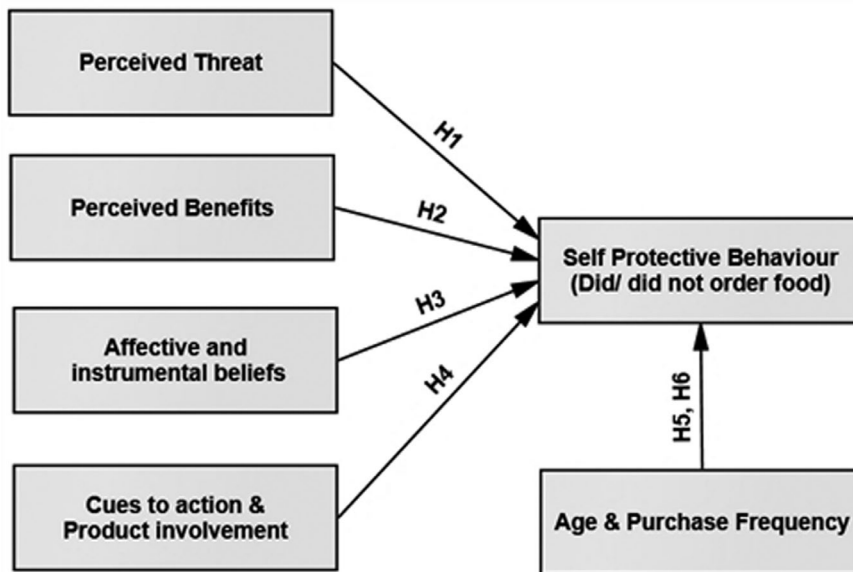
classify cues into two different types namely, internal (disease symptoms or physical changes in the body noticed by the individual) and external (media ads and publicity, posters, government interventions, public health awareness, family and peer advice; Cao et al., 2014; Carpenter, 2010; Glanz et al., 1992; Janz & Becker, 1984; Meshe et al., 2020; Rabbi et al., 2015). Studies find that cues of action can have a positive impact on health behaviour (Carpenter, 2010; Jeong & Ham, 2018; Rosenstock, 1990; Tang & Wong, 2004; Valeeva et al., 2011). During the nationwide lockdown in India, the OFDs providers launched marketing campaigns to instil in viewers the belief that they were following all safety measures and prioritizing safety at each step of the delivery process (Economic & Times, 2020; The Times of India, 2020b). These kinds of marketing campaigns and government interventions (external cues of actions) on online deliveries encouraged customers to buy food online.

Product involvement means the extent of a customer's interest in buying a particular type of product and how dedicated they are to buy a specific brand (N. M. Nguyen & Nguyen, 2019; Peng et al., 2019; Zaichkowsky, 1994). Customer involvement in items appears to be greater for goods that have a higher cost and are purchased after extensive research and thought (Belanche et al., 2017; Handriana & Wisandiko, 2017; Soliha & Widyasari, 2018). These above-stated marketing campaigns and government interventions increase product involvement and help the customers to research OFDs. Hence, this study measures these external cues of actions by measuring the customer product involvement. Studies argue that higher product involvement positively influences the purchase decision (Hollebeek et al., 2007; O'Cass, 2000; Prendergast et al., 2010; Shirin & Kambiz, 2011). When external cues towards a particular product or service are high, they motivate individuals to try the product or service. It is, therefore, hypothesized that:

Hypothesis 4 *Product involvement about OFDs positively influences the customer's purchase decision*

2.2.6 | Other factors

In the HBM, individual characteristics such as age, gender, race and educational qualification, and so forth, can affect their perceptions and behavioural change (Abraham & Sheeran, 2014; Carpenter, 2010; Rosenstock, 1990; Strecher & Rosenstock, 1997). Based on the recent studies on COVID-19, it can be concluded that a more significant number of deaths occurred among adults aged ≥65 years with the highest percentage of severe outcomes among persons aged ≥85 years. However, studies show that severe illness leading to hospitalization, including ICU admission and death with COVID-19 can occur in adults of any age (Bialek et al., 2020; Myers et al., 2020). These kinds of external cues negatively influence the older customers' purchase decision on OFDs. In a marketing context, many researchers argue that the age of the respondent is the main factor that influences customer decision (Hervé & Mullet, 2009; Ketel et al., 2019; Klein et al., 2019; Lobb & Mazzocchi, 2006). Based on these discussions, the age of the respondent is considered as the main factor affecting the purchase decision in regard to OFDs. Grobe et al., (1999) show that demographic factors, such as purchase frequency and age of the customers are essential factors that motivate their self-protective behaviour. A few studies conclude that frequency of purchase influences customer decision and loyalty (Grobe & Douthitt, 1995; Grobe et al., 1999). In particular, Chuo (2007, 2014) concludes that the self-protective decision is affected by the purchase frequency. When a customer purchases a particular product more frequently, it implies that it has a high level of perceived benefit than perceived barrier and threat (Chuo, 2007; Grobe & Douthitt, 1995; Grobe et al., 1999). Based on this discussion, we take age and purchase frequency as main demographic factors affecting the purchase decision. Based on this discussion regarding perceived threat, the following hypotheses are proposed (Figure 1).

Hypothesis 5 *Age of the respondents negatively influences the customer's purchase decision*

Hypothesis 6 *Frequency of ordering food online before the nationwide lockdown positively influenced the customer's purchase decision*

3 | METHODS

3.1 | Data collection

The OFD customers are considered as the target population in this study. The snowball sampling method is used to collect data from 1st April 2020 to 30th April 2020. The nationwide lockdown started in India on 25th March 2020 to limit the movement of the population. However, the government allowed e-commerce firms to remain operational during this period. An online-based well-structured questionnaire was developed using Google forms and shared with the respondents. Online-based survey is the valid choice of data collection procedure during the lockdown to ensure the safety of the respondents and researchers. A screening question was used to filter eligible respondents for the research and only OFDs customers were considered for the study. The respondents were university students in Bangalore city, India (including a junior college student, undergraduates, postgraduate and doctoral students). We sent the questionnaire through WhatsApp and official e-mail ids and invited university students from different regions of Bangalore to provide their response. Meanwhile, we also sent the questionnaire to the university teachers who had cooperated with us and used their contact network to spread the questionnaire. All the respondents have participated voluntarily in this study and no personal information was collected in this research. Samples were collected from Bangalore. During national-wide lockdown, many Indian state governments did not allow operation of OFDs during the nationwide lockdown, many well-established OFDs services like Zomato and Swiggy were fully operational in Bangalore, a city with people from diverse backgrounds. Bangalore city has an adequate representation of the robust Indian population and includes young paying guests and working professionals. The city is, therefore, ideal setting for the context of our study. In total, we received 600 samples during the data collection period in which 138 respondents were not OFDs customers and only 462 were found valid for further analysis, resulting in a response rate of 77%. Therefore, the final sample consisted of 462 respondents, all of whom indicated that they had previous experience with OFDs.

3.2 | Instrument development

The well-structured questionnaire consisted of three sections. The first section had questions on demographic details of the respondents, respondents' patronage frequency before the lockdown and purchase decision during the lockdown. The second section questions were asked to measure the respondents' opinions about the perceived benefit of OFDs and product involvement with OFDs. The perceived benefit scale developed by Forsythe et al. (2006)

was modified and used to fit with the current context to measure the perceived benefits of OFDs. The product involvement scale was adopted from Chuo (2007) and initially used by McQuarrie and Munson (1992). Again, the product involvement scale was modified to the current research setting and the questions were administrated on a Likert 7-point scale ranging from '1 = extremely strongly disagree' to '7 = extremely strongly agree'. The last section of the research instrument was used to measure the perceived threat of the respondents towards OFDs. Turnšek et al. (2020) measured perceived risks with one item using seven-point scale (0 = none; 7 = very high): 'possibility of becoming sick while travelling or at destination'. Chuo (2007) study used three subjective scenarios to estimate the probability that a person will be infected with SARS. In their study, respondents were asked to rate the SARS-infected possibility (perceived threat) in one of the scenarios in terms of percentage (from '0' to '100'). Similarly, two scenarios were presented to the respondents and they were asked to select one suitable scenario, and subjectively estimate the probability (percentage from 0 to 100) that they will be infected with COVID-19. The scenarios were: 1. If you have ordered food, please mention the percentage of chance of getting the infection from that online food delivery. 2. If you have not ordered food during this nation lockdown time yet but are thinking of placing the order then (if lockdown extended). Individual participants were asked to mention the percentage of chance that individual might get infected through the online food delivery based on any one scenario.

4 | RESULTS

The respondents' demographic distribution patterns are shown in Table 1. The respondents' age ranged from 18 to 56 years, with a mean of 27.81 years and standard deviation of 8.7 years. Similar findings were recorded by several researchers, particularly in e-commerce-based research (Ha, 2012; Ladhari et al., 2019; Lissitsa & Kol, 2019). In India, online food ordering and delivery service was introduced in 2014. Several OFD start-ups rose in 2015 with a focus on mobile apps. Over the last decade, the rate of internet access and online shopping increased continuously across all generations. Most of the customers of e-commerce belonged to the age group of Gen Y and Gen Z. The market for Gen X is not too big and along with Baby Boomers, they are considered secondary targets. These age groups consist either of customers who are too old to recognize the new technology and e-commerce, making them a low purchasing power customer group (Bresman & Rao, 2017).

This age-wise classification clears that mostly young generations prefer to buy food through OFDs. About 44.2% of the total respondents were female, whereas the remaining 55.8% were male. The frequency of ordering food through OFDs before nationwide lockdown (last month before the lockdown) ranged from 0 to 18 times with a mean of 4.49 and a standard deviation of 3.75. The perceived threat of the respondents ranged from 0% to 100% with a mean of 45.5% and a standard deviation of 28.95%. Most of the respondents (64.5%) had master's degree and 31.4% of the respondents

TABLE 1 Characteristics of the respondents

Demographic factor	Count	%
Age		
Less than 20 years old	20	4.3
Between 21 and 30 years old	332	71.9
Between 31 and 40 years old	54	11.7
Between 41 and 50 years old	45	9.7
Above 50 years old	11	2.4
Gender		
Male	258	55.8
Female	204	44.2
Educational qualification		
Basic school	19	4.1
Bachelor's degree	145	31.4
Master's degree	298	64.5
Monthly income		
Less than Rs. 20,000	263	56.9
Between Rs. 20,001 and 40,000	59	12.8
Between Rs. 40,001 and 60,000	49	10.6
Between Rs. 60,001 and 100,000	57	12.3
Above Rs. 100,000	34	7.4
Frequency of ordering food online before lockdown		
Less than 5 times	344	74.5
Between 6 and 10 times	90	19.5
Between 11 and 15 times	15	3.2
Between 16 and 20 times	11	2.4
Above 20 times	2	0.4
Purchase decision		
Do not order	317	68.6
Ordered	145	31.4

Source: The authors.

had bachelor's degree, only 4.1% respondents had basic school level educational qualification and 56.9% of the respondent's monthly income was less than Rs.20000.

Exploratory factor analysis was used to check the factor structure of the research items. The sample adequacy was tested using Kaiser–Meyer–Olkin (KMO) and Bartlett's test of sphericity. The KMO (0.948) value was large and Bartlett's test of sphericity ($\chi2 = 7{,}307.56$; $df = 190$; $p < .001$) was significant, implying that the present research has an adequate sample size and correlations among at least some of the items. The rotated component matrix was used from these 20 items; three components were extracted and they were able to capture 70.9% of the variability in the data. The first component, perceived benefits of OFDs consisted of seven items and explained 27.75% of variance and the second component, affective and instrumental beliefs towards OFDs, consisted of four items and explained 26.23% of the variance. The last component, named as OFDs product involvement, consisted of nine items and accounted for 16.96% of the variance. In the final analysis, only items with a factor load above 0.6 were retained.

The confirmatory factor analysis was used to test the reliability and validity of the constructs by developing a measurement model. The construct validity of the instrument was explained by convergent validity and discriminant validity. The convergent validity was assessed using Cronbach's alpha (α), Composite reliability (CR), Average Variance Extracted (AVE) and statistical significance of the item factor loadings (β; Hair et al., 2010). Results provided in Table 2 show that item factor loadings (β) were higher than 0.5 and that no items were deleted in this study. Cronbach alpha coefficients obtained from all the dimensions range from 0.883 to 0.939. The Average Variance Extracted for all dimensions varied from 0.567 to 0.693. The composite reliability ranged from 0.883 to 0.940. All these measures were above the recommended levels (i.e., 0.7 for Cronbach's alpha, 0.7 for composite reliability and 0.5 for Average Variance Extracted), indicating acceptable levels for the reliability of constructs (Hair et al., 2014; Kahle & Malhotra, 1994; Nunnally, 1975) and supporting the convergent validity. Discriminant validity is inferred when measures of each construct converge on their respective true scores, which are unique from the scores of other constructs (Churchill, 1979). AVE and the square root of AVE were higher than inter-construct correlations and AVE values were larger than Maximum Shared Variance (MSV), which support the discriminant validity of the constructs and show that each construct in this research is unique (Fornell & Larcker, 1981; Hair et al., 2014). Based on results in Tables 2 and 3, we can conclude that the constructs are free from construct validity issues.

The measurement models show an adequate fit because $\chi2/df = 3.193$ [$\chi2 = 482.11$; $df = 151$] is between the cut of range 1–5. Also, studies by Hair et al. (2014) and Hu and Bentler (1999) conclude that for the model fit, the Comparative Fit Index (CFI), Goodness Fit Index (GFI) and Adjusted Good Fit Index (AGFI) should be closer to one; and RMSEA and Root Mean Square Residual (RMR) values should be near to zero; GFI = 0.903; AGFI = 0.865; CFI = 0.954. In this study, SRMR = 0.059 and RMSEA = 0.069 and all these values show a reasonable model fit.

To test the research objective, the binary logistic regression was done. Table 4 summarizes the binary logistic regression results. In the present study, whether or not the respondents ordered food through online food delivery services (OFDs) during the COVID-19 outbreak was taken as the dependent variable (0-do not order; 1-ordered); Age of the respondents, frequency of purchase of OFDs, before the nationwide lockdown (last month), respondents affective and instrumental beliefs to buy food from OFDs, respondents' perceived threat about COVID-19 through OFDs, perceived benefits of OFDs and respondents' level of product involvement about OFDs were taken to be the predictor variables.

The values of the regression coefficients and their statistical significance obtained by 'Enter logistical regression method' were included in Table 4. Likelihood ratio (LR) chi-square test is one way of evaluating the overall model fit. Significant likelihood ratio chi-square test indicates the model containing the predictors is a

TABLE 2 Result of the exploratory and confirmatory factor analysis

Items	Perceived benefit	Affective & instrumental beliefs	Product Involvement	β
I do not have to leave home	0.818			0.790
Can order whenever I want	0.822			0.830
Can save the effort of visiting hotels	0.778			0.843
Can order easily	0.805			0.883
Can get useful product information online	0.613			0.830
Can access a broader selection of food products	0.727			0.838
Access to many hotels	0.775			0.811
To try a new experience		0.654		0.797
Exciting to receive food items		0.677		0.854
Can buy on impulse in response to ads		0.753		0.810
Can buy customized food items		0.735		0.773
I usually pay attention to safety ads by online food retailers			0.608	0.730
I read customer reports articles about online food safety			0.718	0.753
I have compared online food retailers based on the safety level			0.75	0.787
I usually talk about safety of online food retailers with other people			0.784	0.784
I am interested in reading about safety aspects of online food retailers			0.818	0.808
I usually spend a lot of time selecting which online food safe to visit			0.729	0.743
I usually take customer rating into account before patronage			0.713	0.775
I usually take safety into account before patronage			0.641	0.677
I usually seek safety advice from others before patronage			0.683	0.713
% Variance explained	27.75%	26.23%	16.95%	
Eigenvalue	5.55	5.245	3.38	
Mean (Standard Deviation)	5.24 (1.49)	4.54 (1.61)	4.60 (1.42)	

significant improvement in the fit over the intercept-only model (De La Viña & Ford, 2001; Galbraith et al., 2007; Pituch, 2015; Zewude & Ashine, 2016). Based on the LR chi-square test, we infer that the full model represents a significant improvement in fit relative to the null model, LR $\chi^2(6) = 248.855$, $p=.001$.

The logistic regression could use two indicators, such as Cox and Snell R^2 ($R^2 = 0.416$) and Nagelkerke R^2 ($R^2 = 0.585$), the same as for coefficient R^2 from linear regression that estimates the contribution of predictor variable to the variability of the dependent variable. We used the Nagelkerke R^2 indicator to analyse the contribution of all the six predictor variables to the variability of the dependent variable. It has been unanimously recognized that Cox and Snell R^2 indicator underestimates the real value (De La Viña & Ford, 2001; Galbraith et al., 2007; Pituch, 2015; Zewude & Ashine, 2016). The test results based on the six predictor variables

(age, purchase frequency, affective and instrumental beliefs, perceived benefits, perceived threat and product involvement) could explain 58.5% of the variance in respondents purchase decision on OFDs selection. The Hosmer and Lemeshow test is another way of testing for the overall model fit (Tab achnick & Fidell, 2013). A nonsignificant test result indicates a good fitting model. Here, we see that the test is nonsignificant, $\chi^2(8) = 13.513$, $p = .095$––suggesting a good fitting model.

Table 4 also provides information on the impact of the independent variables considered in determining the purchasing decision through OFDs (see odds ratio [OR]). The regression slope for purchase frequency (b = 0.477, $p < .01$), perceived benefits (b = 0.275, $p < .05$) and product involvement (b = 0.297, $p < .05$) are positive and statistically significant indicating that the probability of a respondent who likes to order food through online food

TABLE 3 Reliability and validity results

Factors	Cronbach's alpha	Composite reliability	Average Variance Extracted	Maximum Shared Variance	1	2	3
1. Perceived benefit	0.939	0.940	0.693	0.641	0.833		
2. Product Involvement	0.924	0.922	0.567	0.480	0.628	0.753	
3. Affective & instrumental beliefs	0.883	0.883	0.655	0.641	0.801	0.693	0.809

TABLE 4 Results of logistic regression analysis

Predictors	Coefficient estimate	Standard error	Wald	p value	OR	Ratio of probability changes
Age	0.016	0.018	0.861	0.353	1.017	2%
Purchase frequency	0.447	0.048	87.639	0.000**	1.564	56%
Perceived threat	−0.031	0.005	32.952	0.000**	0.970	−3%
Perceived benefit	0.275	0.138	3.974	0.046*	1.317	32%
Affective & instrumental belief	0.066	0.148	0.201	0.654	1.069	7%
Product involvement	0.297	0.147	4.064	0.044*	1.345	35%
Diagnostics						
(LR) Chi-square	248.855			0.000**		
Hosmer & Lemeshow test	13.513			0.095		

**p < .05;
**p < .01.

delivery services was higher for those who have higher purchase frequency, perceived benefits and product involvement. The odds ratio for the predictor indicates that the odds of a respondent who likes to order food through OFDs change by a factor of 1.564 with each raw score increment on purchase frequency, 1.317 with raw score increment on perceived benefit and 1.345 on product involvement.

The regression slope for the perceived threat was negative (b = −0.03, p < .01) and statistically significant indicating that a respondent with a high perceived threat on OFDs was less likely to order food from OFDs. The odds ratio for the predictor indicates that the odds of a respondent who likes to order food through OFDs change by a factor of 0.97 with each raw score decrease on the perceived threat of OFDs.

Increasing purchase frequency (56%), perceived benefits (32%) and product involvement (35%) were associated with an increased likelihood of respondents who purchase food through online food delivery services, but increasing perceived threat (–3%) was associated with a reduction in the likelihood of respondents who purchase food through online food delivery services. However, age, affective and instrumental beliefs did not significantly influence the respondents' purchase decision. Thus, H_1, H_2, H_4 and H_6 are supported. Respondents' age (H_5) and perceived benefit (H_2) were not significant predictors of respondents' decision towards ordering food through OFDs during the pandemic and national-wide lockdown; thus, H_3 and H_5 are not supported.

The classification table summarizes that 100 cases were correctly predicted to be in the group where respondents ordered food on OFDs and 45 were wrongly predicted. Out of the 317 respondents who did not order food through OFDs during the pandemic, 299 cases were correctly predicted and 18 cases were incorrectly predicted. From these values, it can be observed that 86.4% (Hit ratio = (299 + 100)/462 = 86.36%) of data were correctly classified and this hit ratio indicates a good predictive capacity, as is shown in Table 5.

5 | DISCUSSION AND IMPLICATIONS

In this study, we developed a successful regression function to differentiate the personal characteristics of OFDs customers who did and did not order food through OFDs during the COVID-19 outbreak period in India. This study concludes that among the five personal characteristics, frequency of purchase, perceived threat, perceived benefit and product involvement were the contributing factors of the inter-group differences. In other words, the customers who purchased food online through OFDs during the COVID-19 outbreak were linked with less perceived threat and customers who purchased food online through OFDs during the COVID-19 outbreak were associated with a high level of purchase pattern, high perceived benefits and high product involvement. Since the above binary logistic regression has around 58.5% of the variance in the dependent

TABLE 5 Classification results

Observed	Predicted	
	Do not ordered	Ordered
Do not ordered	299 (94.3%)	18 (5.7%)
Ordered	45 (31.03%)	100 (68.97%)

variable, we can explore some substantial marketing implications from the results.

Studies conducted by Aucote et al. (2010), Seabra et al. (2014) and Jeong and Ham (2018) show that perceived threat positively influences the buying decision. However, the present study is negatively consistent with the study in OFDs, where high product involvement leads to positive purchase intentions and high-perceived threat on COVI-19 leads to negative purchase intentions towards OFDs. In disease-based outbreak, perception of threat is very high in OFDs, since the chances of disease spreading are higher through delivery partners, which suggests that respondents think about the uncertainty involved in their purchase (Addo et al., 2020; Chuo, 2007, 2014; Guan et al., 2020). Even though the possibility of COVID-19 spread was very less through OFDs, but lack of awareness resulted in high-perceived threat, creating uncertainty around the purchase, thus, affecting the purchase decision. Mäser and Weiermair (1998) conclude that higher the perceived risk felt by the customers, the less they buy and become more irrational in their decision-making process. Also, current results are consistent with Forsythe et al. (2006), who show that more frequent purchasers are highly motivated towards particular products than the less frequent purchasers. Frequency of purchases will determine customer decision making. Perceived benefit is the sum of benefits an individual expects to attain on following a behaviour (Gabriel et al., 2019; Tweneboah-Koduah, 2018). The present study result is consistent with previous studies (Carico et al., 2020; Gabriel et al., 2019; Janz & Becker, 1984). For example, a person who stays at home during COVID-19 pandemic and orders food through OFDs, not only safeguard themselves from the disease, but also save in terms of expenditure on travelling. The level of product involvement and the risk perceived by the customer throughout the purchasing process is demonstrated to assess the depth, complexity and degree of cognitive and behavioural processes during the customer decision process and our analysis also concludes the same.

From these findings, we can propose managerial implications to OFDs. Many OFDs are using their mobile apps to create COVID-19 awareness; however, this is not enough. The customers are curious and give attention to news and reports related to COVID-19. OFDs can, therefore, use mass media advertisements to create more reliable communication channels. Coca-Cola (Erdman et al., 2017) and Nestle (Dhanesh & Sriramesh, 2018) followed a similar strategy of mass communications to maintain their brand image during the allegation crisis. This approach would advise customers to reduce any spill-over effects and correct any perceptions that may be misleading about perceived disease threats, which would again

positively influence the external cues (product involvement). This would further increase the perceived benefits in terms of convenience, enjoyment and also increase the value associated with the services. Online retailing is emerging in India and the prevalence of OFD services is proliferating. To face potential uncertainty in the future, this problem needs to be expertly examined and effective crisis management tools based on collaborative frameworks by industry respondents and government bodies have to be developed. OFDs companies are taking all reasonable efforts and best practice measures to comply with the safety & health standards/guidelines issued by the Government of India amid COVID-19 to eliminate all risks in their services.

Restaurants and hotels can include hygiene ratings on their OFD apps. The OFD service provider can make such ratings mandatory for all restaurants along with the presence of a food supervisor to monitor compliance of food regulation and ensure the safety of food served. This practice will reduce the level of a perceived threat of OFDs and influence more respondents to opt for OFDs. Many OFD service agents are following contact-free delivery options. In some developing countries, OFDs have implemented the contactless grab transaction for which delivery workers leave the meals at the designated position, standing 2 meters away to await customers (Nguyen & Vu, 2020). Indian OFD service agents can follow a similar delivery model, instead of 'leave at my door delivery', which will increase trust among the customers and increase product involvement. Delivery agents should wear new face masks and gloves and frequently apply hand sanitizers to minimize contamination with diseases (Nguyen & Vu, 2020). OFDs should encourage their customers not to take the delivery if the delivery agent is not using self-protective measures.

The use of e-Wallet and digital payments saw an increase during the pandemic. In developing countries, digital payment or credit card payment is encouraged to limit contact with delivery partners (Nguyen & Vu, 2020). OFDs can provide attractive cashback offers or reward points, for digital payments, which motivates customers to use e-Wallet and digital payments and increase the perceived benefits of OFDs usage. There is currently no evidence of COVID-19 transmission from food. COVID-19 is particularly troubling because it can live on surfaces for extended periods of time, including the two most commonly used in food delivery: paper bags and cardboard boxes. The risk of transmission from food packaging is extremely low (Food & Drug Administration, 2020). The best practice is to transfer the food out of the packaging, dispose of the packaging and thoroughly wash hands. Finally, clean the area where the bag or packaging was resting and this awareness needs to be created by ODFs (Nguyen & Vu, 2020). The most competent practices followed by the restaurant staff and delivery agents should be monitored regularly and proper training should also be given to them on how to maintain hygiene standards at restaurants and during the delivery process.

Moreover, governments should encourage citizens to follow social distancing and not go out for unnecessary activities. OFDs can use this advice to promote their services by delivering essential products along with their food items. This activity can

encourage individuals to follow social distancing. More customers are likely to opt for OFDs shortly, so to gain repeat customers, good value-for-money offers should be used by the OFDs to expand their reach. The OFDs can invest a significant amount of their profit to improve their safety and hygiene standards and the government should insist that OFDs do not trade-off safety with low-cost services (Chuo, 2014). These practical implications can help build customer confidence.

From an academic perspective, no research has been done previously to study differentiating characteristics between OFDs customers who did and did order food through OFDs during the COVID-19 outbreak period in India. This study is intended to bridge the gap by developing a significant binary logistic regression function to predict customer decisions towards purchasing OFDs. The measurement used in the study was adopted, modified and validated to the OFDs context. Subsequent researchers can adopt these scales to measure the product involvement, perceived benefits and perceived threats in the OFD context. The outcome variables (self-protective behaviour) were adopted from HBM. The results are consistent with HBM, which provides better insight into theory. The research can assist academicians to look further into the other constructs that could influence customers' purchase decisions during the pandemic.

6 | LIMITATIONS AND FUTURE SCOPE OF THE STUDY

This study has a few limitations that can be addressed by future researchers. Here, we have used OFDs customers as a target population, but by including other online retailers, we can better understand customer decision towards online retailers. We have used two scenarios to measure customers' perceived threat, as recommended by Chuo (2007); however, future studies should use a specific scale to measure the perceived threat towards this disease and other biological crisis. This model predicts the customers' decision towards OFDs and only 22% is explained by personal characteristics. It is recommended to use other personal characteristics like customer risk attitude, gender, educational qualification and monthly income to develop a more significant function.

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